

THE UNIVERSITY OF MANITOBA

AN ANALYSIS OF FAMILY FARM GROWTH
IN WESTERN MANITOBA - A SYSTEMS APPROACH

by

D. C. GALAPITAGE

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ABSTRACT

This study deals with the process of family farm growth in Western Manitoba. Many people believe that the long run objective of Canadian agriculture should be the development of rural communities based upon the maintenance of the economically viable family farms. The means of achieving this objective are influenced by the technological changes in agriculture. The technological changes and increased use of machinery have changed the internal dimension of family farming. The present study attempts to identify these changes and provide a guideline to achieve the objective of maintaining the economically viable family farm.

Several studies have been done in the area of farm growth using various methods. These can be grouped into three, namely; traditional theory of the firm, behavioural theory of the firm, and systems approach. Present study takes the systems approach to study the process of growth of the family farm system. The system view is an overall view which implies that an isolated study of the parts of system will not be adequate to understand the complete system. A system is a set of components that works together for achieving the overall objective of the system. The components of the system are linked in an interchanging manner, therefore, a study of the isolated parts would not provide a complete view of the system.

The growth of the net-worth is taken as the performance measure of the system. The major components of the family farm system, which affects the growth, are production and consumption. These two components compete for the available resources. Within the production component, crop and livestock operations compete for the resources. Production generates income which is available for consumption and re-investment for future production. The allocation of resources among consumption and investment is one of the major factors which decide the growth rate and therefore, the viability and competitiveness of family farms. The other factor which is affected by this allocation decision is the standard of living of the farm family. These interrelations between standard of living, investments, growth and therefore, future production and future standard of living make it difficult to understand the system by studying the parts of the system.

An econometric model was formed on the basis of systems approach to study the system. The model consists of three estimated equations for production, consumption and investment. An equation of performance measure, or of growth, is formed combining the models of production, consumption and investment. This combined equation links the production and consumption components and investment pattern of the system. The Solow's model is used to determine the technological change in Western Manitoba agriculture.

The data for the study were taken from 23 members of the Western Manitoba Farm Business Association. The analysis of data shows that the farmers have increased production by expanding the size of operations and increasing the use of machinery and material inputs. The growth of net-worth in 1961-69 period in terms of current dollar value was 184 percent. The major factors affected by this high rate of growth are increased use of factor inputs including land and extensive use of credit.

The econometric results and a significant test with 99 percent probability indicate that the industry was at constant return to scale during 1961-69 period. The farmers have carefully expanded the size and increased the use of machinery and material inputs during 1961-67 period. These inputs have been used productively in this period. However, the results indicate that the heavy investments on land and machinery in 1968 have not been productive. The material inputs have been used productively almost throughout the period, however, the labour was not used productively. The analysis of MVP/Price of input ratios indicates that the farmers were not able to coordinate resources to obtain the maximum possible net income from the operations.

The analysis of performance measure shows a 118.2 percent growth of net-worth during 1962-69 period, in terms of 1961 constant dollar value. This is an average rate of 14.78 percent per year. The major factors that influenced

this high rate of growth are expanded operations, increased use of factor inputs and extensive use of credit. The analysis of technological change shows an increase in technological index from 1 in 1961 to 1.8773 and 1.5228 in 1969 in net and gross measures respectively.

The analysis is extended to 1974 by means of forecasting. The forecasting results have shown that the model has a good forecasting power. The 1974 values of the economic variables show an increase in production and factor inputs used. However, these values include the price hikes experienced in 1973-74 period. The rate of growth of net-worth is a result of high production and low consumption.

The overall analysis of 23 Western Manitoba farms has shown that the solution to the problem of poverty among farmers is the expansion of the size of operations. The programmes for improving managerial ability of farmers would be helpful in achieving the objective of a viable competitive farming industry.

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CHAPTER I

INTRODUCTION

"The family farm has long been presented as a goal by politicians and others seeking to win friends among rural folk. Yet it is becoming a more qualified goal. For instance, James Bentley, then first vice-president of the Canadian Federation of Agriculture said in 1959, 'The long term objective of agriculture in Canada should be the development of rural communities based upon the maintenance of the family farm'. In 1969 Charles Munro of C.F.A. changed the emphasis to economically viable family farm."¹

The Federal Task Force on Agriculture considers the family farm as a means to achieve higher goals such as income, personal fulfilments and various social and cultural values. It further has suggested that an examination of family farms can reveal to what extent it was and is a suitable means for achieving the higher objectives.²

Income is closely related to the survival of the business, in farming as well as in other industries. This means that the survival of farms especially those capable of financing a way of life depends upon increased efficiency. If the

¹ Report of the Federal Task Force on Agriculture. Canadian Agriculture in the Seventies. (Queen's Printer for Canada, Ottawa, 1970), p. 33-34.

² Ibid., p. 34.

industry in general is in the phase of increasing return to scale, expansion of size of farms will result in lower unit cost of production. This means more efficient use of resources than before.

In this aspect, consideration should be given to the factors causing the growth of farm firm. Like in any other industry the growth of farm firms heavily depends upon the amount of capital investment. A major source of investment fund is the income generated within the farm. However, in family farm business operation, all the income generated within the farm is not available to plow back into reinvestment in the farm. A substantial portion of income has to be allocated for consumption purposes of farm family. Only the savings is reinvested in the farm. New investments, that would increase the efficiency of factors of production, are required for rapid growth. On the other hand most of these new investment expenditure has to be generated within the farm. Therefore, family farm should be viewed as both the cause and effect of growth. When making plans and decisions to maximize objectives such as increasing income or the quality of life of farmers, these factors should be taken into consideration and a series of plans, instead of an optimum plan, should be outlined.³ The decisions made by farmers are influenced by uncertainties of future

³Eisgruber, L. M. and G. E. Lee. "A Systems Approach to Studying the Growth of the Farm Firm". In Systems Analysis in Agricultural Management. J.B. Dent and J.R. Anderson (eds.) (John Wiley & Sons, Australia Pty. Ltd., Sydney), 1971, p. 330.

and lack of knowledge in specific areas. Often correct decisions are not made. A knowledge of factors affecting the growth and a quantitative examination of the process of capital accumulation on farms would be helpful in making correct decisions. The factors affecting growth and capital accumulation in farms can be analyzed by examining the past growth pattern and the forces influencing the growth. For this purpose the growth pattern of a specific group of farms in a given time period can be studied.

The Problem

The Task Force states that only about a third of 430,000 farms in Canada in 1966 were large enough, by today's standards, for long run viability. The remaining two-thirds fall into two groups; a middle stratum of moderately well off, and a bottom stratum of about 100,000, who live in poverty. It further states, that it is likely that technological changes will continue to push the farming units which are not suited to rapid change into low income levels.⁴

The technological innovations, increased capital investment and somewhat improved managerial ability of farmers have changed the internal dimension of modern farming. These changes in internal dimension demand an increase in the size of farms for the new techniques and equipment can profitably be used only in large scale operations. In addition to these internal requirements, the Task Force states, that inflation

⁴Ibid., p. 409.

and cost-price squeeze imply that farmers must continually expand and improve efficiency in order to maintain or improve income. Unfortunately, most family farms earn very little income and are unable to save or to justify borrowing sufficient funds to finance the required expansion. They fall behind in the competitive race even though some improvements in production are made.⁵ The general economic conditions of those farmers, who were not able to make the necessary changes forced them to leave farming, and, so migrated to the urban centers looking for more favourable living conditions.

The Task Force further states that those who manage to maintain competitive ability, continually expanded and rapidly improved their farm businesses. This made their farm business more complicated and therefore, it became extremely difficult for a farmer to combine all the necessary skills from production technology, through managerial ability, to marketing. Sometimes they make their own problems by borrowing too much, investing excessively on expensive machinery and so forth.⁶

⁵Ibid., p. 21.

⁶Ibid., p. 22.

The situation that farmers were facing was rising input costs and constant or declining product prices. This situation has changed during the past few years. The world food crisis resulted in higher incomes for farmers. However, at present, farmers are again facing rising input prices and unstable product prices, especially in livestock operations. The cost of machinery and equipment inputs, chemical and fuel has gone up. Especially in the livestock industry, many farmers are forced to abandon their livestock operations due to low product prices and high input costs. In Manitoba, the situation is so severe, the government had to intervene to protect livestock operation by paying subsidies to producers. Consequently, the critical problem is low income. In order to increase net income, under these circumstances total production must be increased and the average cost per unit of product must be reduced, or at least, held constant.

Many farmers and economists argue that the per unit cost of production can be reduced by increasing the level of production. This will result in growth of farm firm. Therefore, understanding the farm growth process might be helpful in making plans for cost reductions. Also it will enable to make more reliable policy recommendations. The nature of farm growth process can better be understood by analyzing detailed information on the process. The nature of farm growth will be understood only when the internal

determinants of growth are quantified.

Another reason for the need for more research in this area is the government involvement in improving the living conditions of farmers. Many steps have been taken in Manitoba to improve the quality of life in rural area. These include programmes under the Agricultural and Rural Development Act 1961 (ARDA), the Fund for Rural Economic Development 1966 (FRED), the Small Farm Development Programme 1972 (SFDP) and Farm Diversification Programme. Some of these programmes are not directed only towards the agricultural sector. They alter the resource base available to agriculture and production techniques, and consequently change agricultural output. The main objective of all these programmes is improving the living standards of rural population including farm families. Net income is one of the most influential factors in the standard of living. The net income of farmers can be increased by increasing production. Any attempt to increase production by increasing the size of operation results in farm growth. Therefore, the family farm firm growth is one of the tools that can be used to improve the quality of life among farmers. This can be done by directing government programmes towards the improvement of factors influencing farm growth. This requires a better understanding of the determinants of farm growth which can only be gained by studying the past growth process and factors that influenced it.

Another factor that should be considered at this point is programmes for improving managerial ability of farmers. The main objectives of these programmes is to improve the knowledge of farm managers to increase the efficiency of factor inputs. This objective can better be achieved by correcting farmers' weaknesses in decision making. A study of farm growth may reveal these deficiencies. This information can be used in formulating a training programme for farm managers.

Objectives of the Study

The basic objective of this study is to examine the nature of the growth process of the family farm business in Western Manitoba. Farmers in this specific area were selected for analysis because of the availability of detailed data, from the farm records maintained by members of the Western Manitoba Farm Business Association since 1961. This data comprise of quantitative information on production, resource use, household expenditures and capital investments. Consistent data were available for 23 farms for each year from 1961 to 1969. These data are used in the analysis because of the need for detailed information, over a substantial period of time on individual farms, for examining the complex process of farm growth.

The study is directed towards the identification of internal determinants of farm growth in order to aid decision

making by farmers and policy makers in their efforts to increase net income. The reason for directing the study towards internal determinants is that they are more easily controlled by farmers than the external factors. A crucial element in growth that is considered in this study is the interrelationship between farm and household. The competition between these two sections for resources is taken into consideration.

The specific objectives of the study are;

(1) To formulate an econometric model, on the basis of system approach, to study production, consumption and investment components and to evaluate the factors affecting these components in family farm system.

(2) To analyze the effects of resource utilization, consumption, investment, credit utilization and management on farm growth.

(3) To provide a framework for planning and implementing policies to increase net farm income and to overcome some social and economic problems faced by many farmers.

In this chapter the problem, the necessity for research study in the field and the objectives of the study are discussed. The following chapter critically looks into the studies already done in the field, and discusses the improvements in the present study.

CHAPTER II

A REVIEW OF LITERATURE IN THE AREA OF FARM FIRM GROWTH

Farm firm growth is an area which has received much attention of agricultural economists. Several approaches namely, traditional, behavioural and system approaches, have been used in these studies.

Traditional approach refers to the maximizing behaviour. Main attention under this approach is given to the maximization or minimization of objectives such as profits and costs.⁷ The other activities are considered as means of achieving these objectives and they are not given as much attention as that to the main objective.

Behavioural theorist argue that the traditional theory of the firm fails to reflect the nature of the important interfirm relationships and possible differences which may exist among firms. "Behavioural theory" connotes a theory of manner of response. In economics, we may say that a behavioural theory of the firm would show how changes in the internal characteristics of the firm resulting from the relative importance of the various goals would cause a firm to respond differently to the same condition at different times.⁸

The systems approach looks at the system as an entity. A study of one or two sections or components of the system does not provide a solution to the problem. The components of the system are interrelated. Therefore, the essence of the systems

⁷Eisgruber, L. M. and G. E. Lee, op. cit., p. 331

⁸Ibid., p. 332.

approach is to study the system as a whole. In family farm system this includes the study of the subsystem of family as a whole. These two subsystems correspond to the production and consumption respectively.

Gillis

A study of family farm firm growth in Carman area of Manitoba has been done by Gillis.⁹ The major objectives of his study were to find the factors affecting production, consumption and investment within the agricultural firm household in the Carman area and to analyze the effects of resource productivity, tax rate, technology, consumption and credit on farm growth.

The debt equity ratio has been taken as the criteria for the growth. He has hypothesized that the farm operator's basic goal is to own the entire capital comprising the farm business. The rate of capital accumulation in family farm business depends upon the income generated in the farm and that which is withdrawn for family consumption. Another factor that influences the growth is tax rate.

It is explained that the unit cost of production depends, among other things, on capital; i.e., scale of operation. The smaller the capital stock the higher the unit cost of production and vice-versa. As farmer gets more experience and accumulates more capital the production

⁹Gillis, R.J. Growth of the Family Farm Business in the Carman Area of Manitoba with Particular Reference to Farm Household Interrelationships and Efficiency within the Farm; 1957-67. Unpublished M.Sc. Thesis, Univ. of Manitoba, 1972.